May 13, 2002

Ms. Pam Walker
Missouri Department of Health and Senior Services
930 Wildwood Dr.
Jefferson City, MO 65109

Re: Herculaneum Street Risk Assessment

Dear Ms. Walker:

Enclosed is a copy of a risk assessment prepared at our request by Dr. Teresa Bowers of Gradient Corporation. Dr. Bowers curriculum vitae is attached. We believe that this risk assessment provides additional justification to remove the lead warning signs from Herculaneum.

However, we do understand why the levels of lead on the streets and along the shoulders of the haul roads that were measured last September, raised concerns that initiated the request for the accelerated sampling of community soils by Doe Run. Fortunately, the results of the sampling, as reported from that survey, clearly showed that the contamination on the shoulders did not migrate into the adjacent yards more than 10 feet. In many cases the contamination on the road shoulders is ten times the levels measured in the adjacent yards.

This risk assessment yields a technical justification for a cleanup level of lead dust derived from ore concentrate on the haul roads which is higher than your intuition would suggest. In other words, there is no concern for an excessive elevation in blood lead levels in young children or adult women of child-bearing age at average street dust lead concentrations below this level. However, in reviewing this analysis, The Doe Run Company believes that it will suggest a lower level for street management purposes after all the elements of the Transportation plan are implemented.

This assessment is not required under the Herculaneum AOC but is being provided for your information.

Very truly yours,

Daniel L. Vornberg
VP of Environmental Affairs

This response was designed to answer questions several of you have had about the Haul Road Risk Assessment for Herculaneum.

WHY DID DOE RUN UNDERTAKE THE ROAD RISK ASSESSMENT?

About 3 months ago when we were preparing our defense for the NOV's in front of the Missouri Commissions, we engaged this assessment. It was not part of any of the AOC's and because of the adversarial nature of the NOV resolution procedure at that time, we did not solicit input from the regulatory agencies. It was also anticipated that if might be used in some of the third party litigation currently facing the company to address the question of causation or pathways of contamination. It was also considered that it might be helpful in resolving the issues about the warning signs and where they could come down.

WHEN WAS THE ASSESSMENT FINISHED?

It was not completed until this month. The final report was dated May 8, 2002. We had an electronic version as well as hard copy.

WHY WAS IT RELEASED ON MONDAY MAY THE 13, 2002?

The decision was made the week of May the 6th not to release the report to the community or the agencies at that time.

However, on Sunday May 12th, a promotional ad suggested that St. Louis TV Channel 5 was going to release the results of their own testing and that the DNR interview clip was included in the promo. Knowing what we had learned about the risk on haul roads, we felt we needed to release this information. Monday, we fashioned a hasty press release and sent it out. We also had a draft of a cover letter to the MO DHSS, which we finalized. We placed the risk assessment on our web site about 4:30 Monday afternoon to be available to the media.

We shuttled copies to MODHSS, MO DNR, and sent a copy overnight to USEPA.

WHAT FACTORS INFLUENCED THE OUTCOME OF THIS ASSESSMENT?

The major factors influencing the outcome of this assessment are lead bioavailability and actual potential for exposure. The bioavailability of lead concentrate is very low. The lead concentrate from the Doe Run mines is galena, which essentially non-bioavailable. Drs. Drexler, Casteel , and Weiss, three of the academic and EPA bioavailability researchers, presented a paper in 2000 that shows galena with a 0-1% bioavailability as determined by both swine studies and in vitro (glass studies). Drexler showed that Doe Run galena was 1% bio-available as well as he estates that this is consistent with other bioavailability studies. The other major factor influencing this assessment is that

it was assumed that a mother and 2 year old child would walk along the Herculaneum streets for an hour a day 365 days a year. This is likely an overestimate of any individual's actual contact with the street, but it remains far below the amount of exposure that occurs in the home setting.

IT IS EXPECTED THAT THIS ANALYSIS WILL REFLECT IN THE RESIDENTIAL RISK ASSESSMENTS IN HERCULANEUM?

There are several differences between the exposures that occur to lead in residential soils *vs.* that which occurs to lead in street dust. Most of a young child's exposure occurs to soil in his own yard and dust in his own home. We expect a child to ingest substantially more soil and dust in his residential setting than from the streets. Additionally, the lead bioavailability in the residential soil and dust is probably considerably higher than in the ore concentrate. As a result, we expect the residential risk assessment will provide acceptable soil lead levels more typical of other communities. Even if it is determined that lead concentrate provides a significant contribution of the lead species in Herculaneum yards, an allowance will need to be made for oxidation over time, which is not a factor in a scenario built upon fresh concentrate from trucks on the road.

This is a very narrowly applied risk assessment and to our consultant's knowledge has not been conducted in as much depth for this compound before.